IN THE CLAIMS:

Please add new claims 16-27 as follows.

1. (Original) A digital imbalance correction device, comprising

input means adapted to receive first input signals (I-in, Q-in) containing a plurality of channels from an I/Q converter stage at respective input terminals, each input terminal being associated to a respective signal branch,

a time-to-frequency-domain-transforming means (FFT) adapted to perform a transformation of said first input signals from time-domain into frequency-domain, the transformation result being represented as a power spectrum of said respective first input signals,

a subtracting means arranged to receive at its inputs second input signals which are represented by the power spectra of said respective transformed first input signals and to output the gain difference as a function of frequency at its output,

a cross-correlation means arranged to receive at its inputs third input signals based on said input signals, and to output a cross-correlation of said third input signals, said cross-correlation output being proportional to a phase error between said respective correlation input signals,

a gain correction means arranged in one of said respective signal branches and receiving at its input a fourth input signal based said associated first input signal, wherein a gain of said fourth input signal is corrected based on said power difference spectrum such that said gain of said fourth input signal equals the gain of the other one of said first input signals, and

a phase correction means arranged in one of said respective signal branch and receiving at its input a fifth input signal based said associated first input signal, wherein a phase of said fifth input signal is corrected based on said cross-correlation output, such that said phase of said fifth input signal is in quadrature relation to the other one of said first input signals.

2. (Original) A device according to claim 1, wherein

said phase correction means comprises controllable delay elements.

3. (Original) A device according to claim 1, wherein

said gain correction means comprises controllable amplifier element.

4. (Original) A device according to claim 1, wherein

said input means further comprise analog-to-digital converter means adapted to covert analog input data to digital data.

5. (Original) A device according to claim 1, further comprising

a channelizer means arranged to receive at its respective inputs the phase-corrected and gain-corrected signals based on said first input signals associated to said respective signal paths and adapted to demodulate said signals into the respective individual channels.

6. (Original) A device according to claim 1, wherein

in one of said signal branches (Q) said first input signal equals the third input signal, while

in the other of said signal branch (I) said first input signal equals the fourth input signal, the third input signal equals the fifth input signal, with the third and the fifth input signals being equal to the gain-corrected fourth input signal.

7. (Original) A device according to claim 1, wherein

in one of said signal branch (Q) said first input signal equals the third input signal, while

in the other of said signal branch (I) said first input signal equals the third and the fourth input signal, and the fifth input signal equals the gain-corrected fourth input signal.

8. (Original) A device according to claim 1, wherein

in one of said signal branches (Q) said first input signal equals the third input signal, while

in the other of said signal branches (I) said first input signal equals the third and the fifth input signal, and the fourth input signal equals the phase-corrected fifth input signal.

9. (Original) A device according to claim 1, wherein

said gain correction means and said phase correction means are arranged in the same respective signal branch.

10. (Original) A device according to claim 1, wherein

said gain correction means and said phase correction means are arranged in respective different ones of said signal branches.

11. (Original) A digital imbalance correction method, comprising the steps of

inputting first input signals (I-in, Q-in) containing a plurality of channels and resulting from an I/Q conversion,

time-to-frequency-domain-transforming said inputted first signals to perform a transformation of said first input signals from time-domain into frequency-domain, the transformation result being represented as a power spectrum of said respective first input signals,

subtracting the power spectra of said respective transformed first input signals and outputting the gain difference as a function of frequency,

performing a cross-correlation based on said input signals, and outputting said cross-correlation which is proportional to a phase error between said respective correlation input signals,

performing a gain correction for said input signals based on said power difference spectrum such that said gain of said input signals equals each other, and

performing a phase correction for said input signals based on said cross-correlation such that said phase of said input signals is in quadrature relation to each other.

12. (Original) A method according to claim 11, wherein

said phase correction step comprises controlling a delay.

13. (Original) A method according to claim 11, wherein

said gain correction step comprises controlling an amplification.

14. (Original) A method according to claim 11, wherein

said inputting step further comprise analog-to-digital conversion to covert analog input data to digital data.

15. (Original) A method according to claim 11, further comprising

a channelization step which processes the phase-corrected and gain-corrected signals based on said first input signals and demodulates said signals into the respective individual channels.

16. (New) A digital imbalance correction device, comprising

an input unit configured to receive first input signals (I-in, Q-in);

a time-to-frequency-domain-transformer (FFT) configured to perform a transformation of the first input signals from a time-domain into a frequency-domain and to output a power spectra of the transformed first input signals;

a subtractor configured to receive second input signals, which are based on the power spectra, and to output a gain difference of the second input signals as a function of frequency;

a cross-correlator configured to receive third input signals, which are based on the first input signals, and to output a cross-correlation of the third input signals, wherein the cross-correlation output is proportional to a phase error between the third input signals;

a gain corrector configured to receive a fourth input signal, which is based on at least one of the first input signals, and to correct a gain of the fourth input signal using a difference of the power spectra so that the gain of the fourth input signal equals the gain of the other first input signals; and

a phase corrector configured to receive a fifth input signal, which is based on the at least one of the first input signals, and to correct a phase of the fifth input signal using the cross-correlation output so that the phase of the fifth input signal is in a quadrature relation to the other first input signals.

17. (New) A device according to claim 16, wherein the first input signals comprise a plurality of channels from an I/Q converter stage at respective input terminals.

18. (New) A device according to claim 16, wherein the phase corrector comprises controllable delay elements.

19. (New) A device according to claim 16, wherein the gain corrector comprises a controllable amplifier element.

20. (New) A device according to claim 16, wherein the input unit further comprises an analog-to-digital converter configured to covert analog input data to digital data.

21. (New) A device according to claim 16, further comprising:

a channelizer configured to receive and to demodulate the corrected gain of the fourth input signal and the corrected phase of the fifth input signal into individual channels.

22. (New) A device according to claim 16, wherein the input unit receives the at least one of the first input signals at a first signal branch (Q) and receives the other first input signal at a second signal branch (I), wherein at the first signal branch (Q), the one of the first input signals equals one of the third input signals, and at the second signal branch (I), the first input signal equals the fourth input signal, the third input signal equals the fifth input signal, with the one of the third input signal and the fifth input signal being equal to the gain-corrected fourth input signal.

23. (New) A device according to claim 16, wherein the input unit receives the at least one of the first input signals at a first signal branch (Q) and receives the other first

input signal at a second signal branch (I), wherein at the first signal branch (Q), the first input signal equals one of the third input signals, and at the second signal branch (I), the first input signal equals the third and the fourth input signals, and the fifth input signal equals the gain-corrected fourth input signal.

24. (New) A device according to claim 16, wherein the input unit receives the at least one of the first input signals at a first signal branch (Q) and receives the other first input signal at a second signal branch (I), wherein at the first signal branch (Q), the first input signal equals one of the third input signals, and at the second signal branch (I), the first input signal equals the one of the third input signal and the fifth input signal, and the fourth input signal equals the phase-corrected fifth input signal.

25. (New) A device according to claim 16, wherein the gain corrector and the phase corrector are arranged in the same signal branch.

26. (New) A device according to claim 16, wherein the gain corrector and the phase corrector are arranged in different signal branches.

27. (New) A digital imbalance correction device, comprising

an input unit configured to receive first and second input signals (I-in, Q-in);

a time-to-frequency-domain-transformer (FFT) configured to perform a transformation of the first and second input signals from a time-domain into a frequency-domain and to output a power spectra of the transformed first and second input signals;

a subtractor configured to receive the power spectra and to output a gain difference of the power spectra as a function of frequency;

a cross-correlator configured to receive the second input signal and to output a cross-correlation of the second input signal;

a gain corrector configured to receive the first input signal and to correct a gain of the first input signal using a difference of the power spectra so that the gain of the first input signal equals the gain of the second input signal, wherein the cross-correlation output is proportional to a phase error between the second input signal and the corrected first input signal or between the first input signal and the second input signal; and

a phase corrector configured to receive the corrected first input signal, and to correct a phase of the corrected first input signal using the cross-correlation output so that the phase of the corrected first input signal is in a quadrature relation to the second input signal.